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Q4 Syndrome in Public Sector Financial Management: Case and Evidence from a Spending Unit of Indonesia's Ministry of Transportation

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Abstract

Purpose – This study aims to investigate the manifestation and underlying drivers of Q4 Syndrome, defined as the concentration of government expenditure in the final quarter of the fiscal year, within a working unit of Indonesia's Ministry of Transportation.
Design/Methodology/Approach – The research employs a quantitative case study approach using descriptive financial analysis. Monthly budget realization data, expenditure composition, and procurement/payment execution timing over a single fiscal year are analyzed to identify spending patterns and execution dynamics.
Results – The findings reveal a significant concentration of budget absorption in the fourth quarter, with a substantial proportion of annual expenditure executed during this period. Capital expenditures and procurement-related payments were heavily clustered in the final months, indicating delayed execution rather than evenly distributed disbursement throughout the fiscal year.
Research limitations/Implications – The study provides case-based empirical evidence of Q4 Syndrome at the operational level. Institutional incentives—such as absorption-based performance evaluation, concerns over future budget reductions, and compliance-oriented controls—contribute to risk-averse spending behavior in earlier quarters. However, the single-unit case design limits generalizability. The findings highlight the need to shift performance measurement from absorption rates toward output-based indicators and to strengthen early-stage budget execution mechanisms.

Keywords: Budget Absorption, Government Budget Execution, Public Sector Financial Management, Q4 Syndrome

Introduction

Government budgeting systems are designed to promote fiscal discipline, accountability, and the effective and efficient allocation of public resources (Mardiasmo, 2009; Halim & Kusufi, 2014). In Indonesia, these objectives operate within a fixed annual budgeting cycle under which unspent appropriations expire at the end of the fiscal year. This institutional arrangement frequently generates end-of-year expenditure concentration, commonly referred to as Q4 Syndrome. Under this "use-it-or-lose-it" framework, government spending units (*satker*) are incentivized to accelerate expenditure in the final quarter to avoid future budget reductions, and poor performance judgment, regardless of marginal value (Jones, 2010; Liebman & Mahoney, 2017; Permana & Andriaty, 2020).

Empirical evidence from the United States and other jurisdictions demonstrates that expiring-budget regimes systematically produce Q4 spending spikes and are often associated with lower-quality procurement outcomes, including rushed contracting and reduced oversight (Liebman & Mahoney, 2017). Similar patterns are widely observed in Indonesia, where budget realization tends to be slow during the first three quarters and sharply increases in Q4 across ministries and local governments (Abdurrohman & Marsus, 2017). Additionally, prior studies in accounting and public sector management also suggest that budget absorption patterns and execution timing in public organizations, which leads to Q4 spending spikes, can be influenced by weaknesses in budget planning, internal control systems, and managerial commitment (Ayem & Purwanto, 2024). This phenomenon indicates that Q4 spending concentration is not merely a technical timing issue but reflects deeper institutional and administrative constraints embedded in public financial management systems.

Despite extensive recognition, most prior studies rely on aggregate or cross-sectional data at the national or regional level. Such approaches may obscure execution behavior at the organizational-unit level, where managerial incentives and administrative constraints operate directly. Micro-level empirical evidence using actual financial realization data from individual spending units remains limited, particularly within Indonesian central government institutions.

Addressing this gap, the present study examines Q4 Syndrome using a quantitative case study of a single spending unit within the Ministry of Transportation of the Republic of Indonesia. By analyzing multi-year monthly budget allocation and realization data, this study aims to (1) assess whether Q4 execution pressure is associated with financial efficiency, (2) evaluate whether the

effect of late budget revisions on efficiency is conditional upon execution pressure, and (3) examine whether budget blocking systematically reduces financial efficiency. Accordingly, the central research question is: How do Q4 execution pressure, late budget revisions, and budget blocking influence financial efficiency at the spending-unit level under Indonesia's annual budgeting system?

Literature Review & Hypothesis

Literature Review

Q4 Syndrome and Institutional Incentives

Q4 Syndrome can be theoretically explained through agency theory and the concept of soft budget constraints. In public organizations, managers (*satker*) acting as agents are frequently evaluated based on budget absorption rates rather than spending quality or output achievement. Under-spending may be interpreted as poor managerial performance and can lead to reduced future allocations, whereas inefficient spending is rarely penalized ex post (Prendergast, 2007; Kornai, 2001; Permana & Andriaty, 2020). This asymmetric incentive structure rationally motivates managers to exhaust budgets before fiscal year-end, even when spending efficiency is questionable.

In management accounting literature, it further highlights that budgeting systems and participation mechanisms influence managerial behavior and performance outcomes within organizations (Kurniawan & Se Tin, 2021). Similarly, studies on responsibility accounting indicate that poorly designed budgeting and performance evaluation systems may encourage opportunistic behaviors such as budget slack or inefficient spending to satisfy performance targets (Sinuraya, 2014).

Public procurement and budget execution involve sequential processes—planning, tendering, contract approval, and payment authorization—that are vulnerable to early-year delays. When these delays accumulate, implementation becomes compressed into the final months, increasing execution pressure and operational risk (Flyvbjerg, 2014). Empirical evidence further shows that shorter procurement timelines and late-year contract awards are correlated with compromised value-for-money outcomes (Lewis-Faupel et al., 2016). These findings suggest that concentrated end-year spending may weaken the linkage between expenditure realization and output achievement, potentially reducing financial efficiency.

Budget Revisions, Disruption, and Adaptive Mechanisms

Budget revisions are common administrative instruments within public budgeting systems (Allen & Tommasi, 2001; OECD, 2019). However, revisions occurring late in the fiscal year may potentially delay implementation while approvals are pending and compress the remaining execution period (Diamond & Potter, 1999; OECD, 2019). Under elevated Q4 execution pressure, such temporal compression can intensify administrative bottlenecks, reduce

procurement flexibility, and undermine efficient implementation. This represents a disruption mechanism, whereby late adjustments exacerbate time constraints and planning inefficiencies (Liebman & Mahoney, 2017; McCue et al., 2021).

Conversely, revisions may also function as institutional adjustment mechanisms that correct initial planning inaccuracies and reallocate resources toward higher-priority or more feasible activities (Allen & Tommasi, 2001). This adaptive mechanism may enhance allocative efficiency despite compressed timelines. Therefore, revisions do not inherently generate inefficiency; their effect depends on the broader execution context and the intensity of Q4 pressure.

Given these competing mechanisms, the impact of late budget revisions is conceptualized as conditional rather than uniform.

Budget Blocking and Execution Timing

Budget blocking, imposed by central fiscal authorities, restricts early execution regardless of managerial performance (OECD, 2019). While such restrictions may shift implementation toward later periods of the fiscal year and increase execution compression, they primarily function as macro-fiscal control instruments intended to maintain aggregate fiscal discipline.

Although compressed execution may theoretically increase the risk of rushed procurement and weakened oversight—patterns often observed in end-of-year spending surges associated with "use-it-or-lose-it" budget rules (Liebman & Mahoney, 2017; McCue et al., 2021)—budget blocking does not necessarily alter the substantive quality of spending decisions. Instead, it mainly affects the timing of realization. Consequently, blocked budget adjustments are not expected to systematically reduce financial efficiency, even under elevated execution pressure.

The statement above is interpreted in detail and designed through the conceptual framework in this study to illustrate the between the independent variables and the dependent variable, as outlined in Figure 1 below:

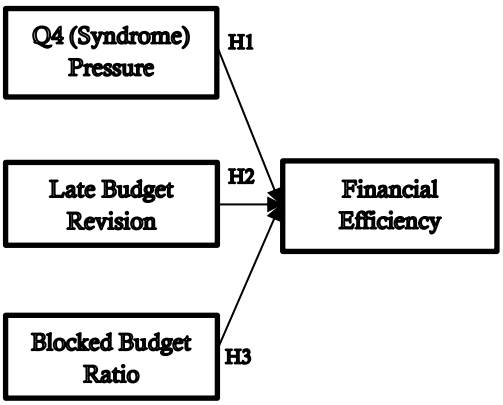

Figure 1
Conceptual Framework of Q4 Syndrome and Financial Efficiency in Public Sector Budget Execution

Hypothesis

Accordingly, the hypotheses tested in this study are stated as follows:
H1: Q4 execution pressure is negatively associated with financial efficiency.
H2: The efficiency implications of late budget revisions are theoretically conditional on execution pressure, reflecting competing disruption and adaptive mechanisms that may offset each other under extreme Q4 conditions.
H3: Blocked budget adjustments do not systematically reduce financial efficiency, even under conditions of elevated execution pressure.

Research Method

This study employs a quantitative case study approach to examine the effect of Q4 spending concentration (Q4 Syndrome) on financial efficiency within a public sector organization. The research is conducted at a single spending unit (satker) within Indonesia's Ministry of Transportation. The ministry provides a theoretically rich context due to its procurement-intensive expenditure structure, multi-stage administrative approval processes, and operational expenditures closely linked to infrastructure and service delivery. These characteristics increase execution risk and make year-end spending acceleration more likely, thereby providing an appropriate empirical setting for testing the proposed hypotheses.

The population of this study consists of government spending units operating under Indonesia's public financial management system. However, the sample is selected purposively using a single-case sampling method. Q4 Syndrome is fundamentally an institutional and behavioral phenomenon operating at the organizational-unit level through budget execution rules and managerial incentives. Therefore, focusing on a single spending unit enhances internal validity by enabling detailed observation of intra-organizational execution patterns across multiple fiscal years. The findings are analytically generalized to public budgeting theory rather than statistically generalized to all government entities.

This study does not involve human respondents, as all data are administrative in nature. The unit of analysis is the spending unit–year observation, constructed from monthly and quarterly aggregated financial and performance data over multiple fiscal years and across the programs. The research instrument consists of structured quantitative indicators derived from official financial management systems, including Annual Budget Allocation Reports (DIPA), Budget Realization Reports (LRA), internal performance reports, and administrative execution records. These sources ensure objectivity, auditability, and consistency of measurement.

Table 1
Data Sources

Data Sources	Details	Objectives
Annual Budget Allocation Report (DIPA)	• Approved annual expenditure ceilings • Budget classification by program and activity	Measuring budget size and identifying the number of revisions and total of budget blocking
Budget Realization Reports (LRA)	Monthly or quarterly expenditure realization	Computing monthly and quarterly spending distribution, and Q4 concentration
Internal Performance Reports	Output or activity realization indicators	Analyzing the output achieved throughout the fiscal year to identify the efficiency
Administrative Execution Records	Payment timing	Identifying risk final quarter execution

Source: Research Data Compilation (2026)

The primary independent variable, Q4Pressure, measures the intensity of year-end spending concentration and is defined as the proportion of fourth-quarter realization relative to total annual realization:

$$Q4Pressure_{m,t} = \frac{CumulativeQ4Realization_{m,t}}{TotalRealization_{m,t}} \quad (1)$$

where cumulative Q4 realization represents the sum of realized expenditures in October, November, and December:

$$CumulativeQ4Realizations_{m,t} = \sum_{k \in \{Oct,Nov,Dec\}} RealizedExpenditure_{k,t} \quad (2)$$

and total annual realization is computed as:

$$TotalRealizations_{m,t} = \sum_{k=1}^{m} RealizedExpenditure_{k,t} \quad (3)$$

Accordingly, a higher value of Q4 Pressure indicates stronger concentration of spending in the final quarter, consistent with the presence of Q4 Syndrome.

Financial efficiency, then defined as the dependent variable, captures the extent to which realized expenditures are translated into measurable outputs. In public sector accounting and performance management literature, financial efficiency is commonly understood as the relationship between resources consumed (inputs) and services or deliverables produced (outputs), rather than profit maximization as in the

private sector (Hood, 1991; Mandl et al, 2008; Mihaiu et al, 2010). The measurement of financial efficiency in government organizations is rooted in the economy-efficiency-effectiveness (3E) framework, which underpins modern public financial management reforms. Efficiency, within this framework, specifically concerns the ability of an organization to maximize outputs for a given level of expenditure or, equivalently, to minimize expenditure for a given level of output (Otrusinova & Pastuszkova, 2012; OECD, 2013; Schick, 2014). Unlike private firms, public sector entities do not operate under market prices or profit signals. Consequently, efficiency must be assessed using non-financial performance indicators linked to service delivery outcomes (Pollitt & Bouckaert, 2017). It is operationalized as the natural logarithm of the ratio between weighted output achievement and cumulative realized expenditure:

$$Efficiency_{m,t} = ln\left[\frac{\sum_p Weight_{p,m} \, x \, OutputAchievement_{p,m}}{CumulativeRealization_{m,t}}\right] \quad (4)$$

Program weights are defined as the share of each program's cumulative budget relative to the total budget:

$$Weight_{p,m} = \frac{CumulativeBudget_{p,m}}{\sum_p CumulativeBudget_{p,m}} \quad (5)$$

This specification ensures that programs with greater fiscal significance exert proportionally greater influence on the efficiency score. The logarithmic transformation normalizes the distribution and allows elasticity-based interpretation in the regression analysis.

Two control variables are incorporated to isolate the behavioral effect of Q4 Syndrome. Late budget revision captures planning instability and is measured as:

$$L_{Revision\,m,t} = \frac{\sum_{k\in\{Jul,\ldots,Dec\},k\leq m} Revision_{k,t}}{\sum_{k=1}^{m} TotalRevision_{k,t}} \quad (6)$$

This formulation preserves temporal sequencing and captures the proportion of revisions approved in the second half of the fiscal year. Budget Blocking captures execution constraints imposed externally and is first measured as:

$$BlockedBudgetRatio_{m,t} = \frac{\sum_p BlockedAmount_{p,m,t}}{\sum_p ApprovedAllocatedBudget_{p,t}} \quad (7)$$

The variable used in estimation is its first difference:

$$\Delta BlockedBudgetRatio_{m,t} = BlockedBudgetRatio_{m,t} - BlockedBudgetRatio_{m-1,t} \quad (8)$$

This transformation captures execution shocks rather than persistent institutional rigidity.

The empirical analysis applies panel regression techniques to estimate the relationship between Q4 spending concentration and financial efficiency. The estimation model specifies Financial efficiency as a function of Q4 Pressure, late budget revision, and changes in budget blocking, expressed as:

$$Efficiency_{m,t} = \alpha_0 + \beta_1 . Q4Pressure_{m,t} + \beta_2 . L_{Revisions_{m,t}} + \beta_3 . \Delta BlockedBudgetRatio_{m,t} + \in_{m,t} \quad (9)$$

Where α_0 is the intercept, β_1 captures the marginal effect of Q4 spending concentration on financial efficiency, β_2 accounts for planning instability due to budget revisions, and β_3 captures administrative congestion and execution disruption due to budget blocking. Prior to estimation, several diagnostic tests were applied in order to guarantee the validity of the model and ensure the analytical robustness. Multicollinearity tests (VIF) were conducted to verify the independence of variables, while panel unit root tests (IPS and Fisher-type ADF) confirmed data stationarity across time. These procedures strengthen analytical robustness and ensure the reliability of the empirical findings.

Results and Discussion

Descriptive Analysis

Table 2 summarizes the descriptive statistics of key variables used to analyze budget execution performance during 2020–2025.

Table 2
Summary Statistic of Key Indicators

Indicator	Mean	SD	Min	Max
OutputAchievement	46	33	0	100
Q4RealizedExpenditure*	1.134	4.396	0	46.079
CumulativeRealization*	5.832	7.054	0	60.713
AllocationBudget*	18.909	13.775	5.872	60.772
CumulativeRevisions	5	4	0	14
CumulativeRevisionsAfterQ2	2	3	0	9
BlockedAmounts*	3.128	4.763	0	18.943

Note: *in million Rupiah
Sources: Results of Author Data Processing (2026)

The descriptive evidence reveals substantial heterogeneity in both output performance and financial execution. Output achievement averages 46% with a relatively large standard deviation (33), indicating uneven progress across fiscal periods. The wide range (0–100) reflects the temporal measurement of fiscal-year progress and enables comparison with

cumulative financial realization and administrative adjustments.

Regarding expenditure patterns, Q4 realized expenditure exhibits strong dispersion, with a mean of IDR 1.134 million and a maximum of IDR 46.079 million. Importantly, the standard deviation (4.396) is considerably larger than the mean, indicating extreme variation and the likely presence of outlier observations in which year-end spending surged far above normal levels. This suggests that expenditure concentration is not systematic across all observations, but is driven by a subset of units or periods facing intense year-end execution pressure. Similarly, cumulative realization also records a standard deviation (7.054) exceeding its mean (5.832), implying uneven spending progress across the fiscal year and substantial differences in execution timing.

Budget allocation ranges widely (IDR 5.872-60.772 million), suggesting differences in execution capacity across units. Meanwhile, revisions occur frequently, with an average of five cumulative revisions and two occurring after Q2. The post-Q2 revisions also display a standard deviation greater than the mean (3 > 2), indicating that while some observations experience few or no late revisions, others undergo repeated adjustments during the second half of the fiscal year. This points to planning instability and reactive budget management. Blocked amounts likewise show pronounced dispersion, with the standard deviation (4.763) exceeding the mean (3.128), suggesting that administrative constraints are severe in certain periods but absent in others. Overall, the descriptive findings indicate that fiscal execution problems are concentrated rather than uniform, characterized by recurring year-end spending spikes, uneven realization patterns, and unstable planning adjustments. These results provide preliminary descriptive support for the existence of Q4 Syndrome.

Baseline Estimation and Hypothesis Testing

A multivariate regression model with robust standard errors was estimated, to examine the relationship between year-end spending pressure and financial efficiency.

The correlation matrix in Table 3 shows a negative association between Q4 Pressure and Efficiency ($r = -0.1810$), suggesting that greater year-end concentration is linked to lower efficiency. The correlation between Q4 Pressure and L_Revision ($r = 0.5246$) is moderate but below conventional multicollinearity thresholds.

Table 3
Correlation Matrix

Indicator	Efficiency	Q4Pressure	L_Revision	ΔBlocked Budget Ratio
Efficiency	1.0000			
Q4Pressure	-0.1810	1.0000		
L_Revision	0.0122	0.5246	1.0000	
ΔBlockedBudgetRatio	0.0554	-0.0462	0.0453	1.0000

Sources: Results of Author Data Processing (2026)

Variance Inflation Factor (VIF) results confirm the absence of multicollinearity concerns (mean VIF = 1.27), validating the joint inclusion of explanatory variables in the regression model, shown in Table 4.

This method is used in order to measure how much an independent variable can be predicted linearly from other variables in the model. The results indicate that Q4 Pressure and L_Revision both have a VIF value of 1.39, while ΔBlockedBudgetRatio records a VIF of 1.01. According to Gujarati and Porter (2009), a value greater than 10 indicates significant multicollinearity, while Hair et al. (2019) suggested a more conservative threshold of 5 for the values, especially for managerial and behavioral. Consequently, the overall mean VIF value indicates that no multicollinearity problem exists among the explanatory variables involved in the model.

Table 4
The VIF Results

Indicator	VIF	1/VIF
Q4Pressure	1.39	0.717632
L_Revision	1.39	0.718788
ΔBlockedBudgetRatio	1.01	0.988152
Mean VIF	**1.27**	**-**

Sources: Results of Author Data Processing (2026)

Regression Results

The estimation result for financial efficiency, which is referring to Equation 8, is illustrated in Table 5. The model is estimated using robust standard errors to address potential heteroskedasticity.

Table 5
Regression Results

EFFICIENCY	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Q4Pressure	-9.861	3.51	-2.81	.006	-16.801	-2.921	***
L_Revision	2.487	2.343	1.06	.29	-2.146	7.119	
d_BlockedBudgetRatio	10.112	7.679	1.32	.19	-5.072	25.296	
Constant	-21.147	.68	-31.12	0	-22.49	-19.803	***
Mean dependent var		-21.161	SD dependent var			6.484	
R-squared		0.059	Number of obs			142	
F-test		5.418	Prob > F			0.001	
Akaike crit. (AIC)		932.224	Bayesian crit. (BIC)			944.047	

*** *p<.01*, ** *p<.05*, * *p<.1*

Sources: Results of Author Data Processing (2026)

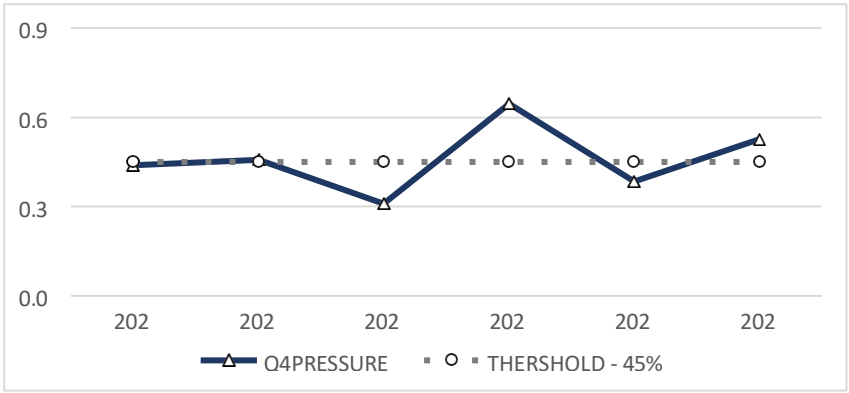

Figure 2
Year-End Spending Concentration (2020–2025)

The analysis reveals that Q4 Pressure plays a decisive role in determining financial efficiency since it has a negative and statistically significant coefficient (β = –9.861, p = 0.006), indicating that a one-percentage increase in year-end spending concentration is associated with a 9.86-percentage decrease in efficiency, holding other factors constant. In practical terms, efficiency performance declines as year-end spending pressure increases. Referring to the case and evidence from the spending unit sample, Figure 2 illustrates the evolution of Q4 execution pressure between 2020 and 2025, using a 45% reference threshold.

Under a temporally balanced fiscal execution pattern, each quarter would account for approximately 25% of annual expenditure. A Q4 share exceeding 45% therefore represents a substantial deviation from a neutral distribution, indicating that nearly half or more of total annual spending occurred in the final quarter. The graph shows that Q4 concentration nearly reached or exceeded this threshold during most of the sampling

period, particularly in 2023 (65%), while only 2022 and 2024 remained below it. The recurring crossing of this threshold suggests that Q4 Syndrome is not sporadic, but periodically intensified within the fiscal year.

Furthermore, this finding is consistent with prior research on end-of-fiscal-year spending behavior. Previous studies show that public sector organizations often increase spending sharply at the end of the fiscal year due to "use-it-or-lose-it" budget incentives (Liebman & Mahoney, 2017). When budgets expire annually, managers may accelerate procurement to avoid future budget reductions or underperformance assessments. From qualitative observations, this pattern was also evident in the sampled spending unit. For example, in 2023, when Q4 concentration was highest, an additional mandatory budget allocation was introduced in Q2. The procurement process required a substantial lead time and was only completed in the final month of the fiscal year, generating a large amount of realization at year-end. However, such spending behavior, often characterized as "rushed" expenditure decisions, may reduce value for money.

The result can also be interpreted through Agency Theory (Jensen & Meckling, 1976), where agents (spending units) may respond to incentives that differ from the long-term objectives of principals. If performance is evaluated primarily by budget absorption rather than efficiency and effectiveness, managers may prioritize full utilization of appropriations. In this case, budgeting performance assessments that emphasize absorption rates may reinforce compliance-oriented behavior and contribute to Q4 concentration. Moreover, spending units may accelerate expenditures near fiscal year-end if they expect future funding to depend on demonstrating full use of current allocations. This interpretation is also consistent with Soft Budget Constraint Theory (Kornai, 1980).

Interestingly, both L_Revision ($\beta = 2.487$, $p = 0.290$) and ΔBlockedBudgetRatio ($\beta = 10.112$, $p = 0.190$) as variable controls have positive impact on financial efficiency but are statistically insignificant. For late budget revisions conceptually, these may signal planning instability of adaptive adjustment during budget execution. In the context of public financial management theory, frequent or delayed revisions signal weak initial forecasting, or adaptive adjustments to emerging conditions (Schick, 1998; Allen & Tommasi, 2001). Since the confidence interval result (–2.146 to 7.119) crosses zero, it indicates that the true effect could be positive, negative, or effectively no effect at all. Hence, late revisions can operate in two opposite directions from an efficiency perspective. First, the disruption effect suggests that late revisions may delay procurement processes, create administrative bottlenecks, and compress implementation time. This means that flexibility in adjusting budgets reduces discipline and weakens planning credibility, aligning with the literature on soft budget constraint (Kornai, 1986). Second, the adaptive efficiency

effect alternatively shows that revisions can improve allocative efficiency by reallocating funds towards higher-priority or better-performing programs once more information becomes available. This means flexibility enhances responsiveness and improves outcome alignment, aligning with the adaptive budgeting theory (Sunaryo et al, 2025; Schick, 1998). Consequently, the insignificant result suggests that these two opposing mechanisms may offset each other in practice. In other words, some revisions may improve efficiency while others disrupt execution, leading to no clear systematic effect in aggregate data. Although the point estimate is positive, the wide confidence interval indicates substantial uncertainty. Therefore, the findings do not provide conclusive evidence that late revisions systematically enhance or undermine financial efficiency. Rather, the result suggests that adaptive reallocation benefits may offset disruption effects in aggregate. This finding underscores the conditional nature of budget flexibility, where its efficiency implications depend on institutional capacity, timing discipline, and managerial behavior. Furthermore, the changes in the blocked budget ratio conceptually capture the external execution constraints imposed by the higher authority (e.g, fiscal tightening, revenue shortfalls, or political adjustments). From a theoretical perspective, budget blocking can also work through two competing mechanisms: (1) positive effect (discipline mechanism), interpreting budget blocking can strengthen expenditure control and reduce waste. Public choice theory and fiscal discipline literature suggest that temporary expenditure constraints may force managers to prioritize high-value projects, eliminate low-priority spending, and improve resource allocation efficiency (Shughart, 2008; Nuzulqurana et al, 2025; Dwi, 2024); (2) negative effect (distortion mechanism), interpreting sudden blocking can disrupt procurement cycles, create uncertainty, and encourage end-of-year spending surges once funds are released. This result may interpret that some spending units may respond to blocking by becoming more efficient, while others may experience execution delays and be inefficient. In this case, it is most likely considered to have a positive effect, since a blocked amount of budget stated on Annual Budget Allocation Reports' spending unit occurs in order to eliminate low-priority spending, and resource allocation efficiency as a mandatory.

The model explains 5,9% of the variation in financial efficiency, and the F-test indicates the explanatory variables jointly have significant predictive power ($F = 5.418$; $p = 0.001$). Although this explanatory power is modest, this magnitude is reasonable in public sector financial management research, where efficiency outcomes are shaped by complex institutional, behavioral, bureaucrat administrative, and political factors that are not fully observable in financial statement data alone. In governance and public administration studies, relatively low R-squared values may still be

substantively meaningful when statistically significant variables identify specific behavioral mechanisms within multifaceted organizations (Wooldridge, 2019; Osborne & Gaebler, 1992). In other words, the result suggests that Q4 Pressure is an important determinant, but not the sole driver, of financial efficiency.

Future research should therefore incorporate broader explanatory variables beyond budget execution indicators. One promising dimension is administrative capacity, including staff competency, procurement professionalism, digitalization of financial systems, leadership quality, and internal control maturity. Stronger administrative capacity is frequently associated with better policy implementation, stronger budget credibility, and more efficient service delivery (Painter & Pierre, 2005; Andrews, Pritchett, & Woolcock, 2017). Another important dimension is political and institutional stability, such as leadership turnover, policy continuity, intergovernmental coordination, and the intensity of local political contestation. Political instability may delay decisions, distort spending priorities, or weaken implementation discipline, whereas stable governance environments tend to support more predictable and efficient budget execution (North, 1990; Acemoglu & Robinson, 2012). Additional factors such as organizational culture, corruption risk, monitoring quality, and external economic shocks may also explain remaining variation in efficiency outcomes.

Overall, the findings suggest that accelerated year-end spending may compromise planning quality, oversight, and value-for-money considerations. In contrast, late budget revisions and changes in blocked budget ratios do not exhibit statistically significant effects on financial efficiency, which implies that administrative adjustments alone do not systematically improve or deteriorate efficiency. This is consistent with agency theory and soft budget constraint arguments, and the evidence indicates that the behavioral incentives driving end-of-year expenditure concentration (rather than formal budget flexibility mechanisms) constitute the dominant source of efficiency variation.

Robustness Analysis

Multiple robustness tests were conducted in order to ensure that the findings are not driven by specification bias. Several robustness models were estimated by incorporating alternative fiscal control variables and interactions specifications. Additionally, Q4 pressure was re-specified as a binary indicator capturing extreme exposure (top quartile of spending concentration), which is interpreted as Extreme_Q4.

Table 6
Tabulation of EXTREME_Q4

	Freq.	Percent	Cum.
0	108	75.00	75.00
1	36	25.00	100.00
Total	144	100.00	

Sources: Results of Author Data Processing (2026)

Robustness model and result expressed as:

$$Efficiency_{m,t} = \alpha_0 + \beta_1.Extreme\_Q4_{m,t} + \boldsymbol{\beta_2.L\_Revisions_{m,t}} + \boldsymbol{\beta_3.\Delta BlockedBudgetRatio_{m,t}} + \beta_4.(Extreme\_Q4_{m,t}.L\_Revisions_{m,t}) + \beta_5.(Extreme\_Q4_{m,t}.\Delta BlockedBudgetRatio_{m,t}) + \in_{m,t} \quad (10)$$

Table 7
Robustness Results

EFFICIENCY	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Extreme_Q4	-8.213	3.041	-2.70	.008	-14.227	-2.199	***
L_Revision	2.542	2.505	1.01	.312	-2.413	7.496	
d_BlockedBudgetRatio	11.413	9.357	1.22	.225	-7.092	29.917	
Extreme_Q4_ L_Revision	-2.555	5.863	-0.44	.664	-14.149	9.04	
Extreme_Q4_ d_BlockedBudgetRatio	-73.58	89.791	-0.82	.414	-251.146	103.986	
Constant	-21.194	.718	-29.51	0	-22.614	-19.773	***
Mean dependent var		-21.161	SD dependent var			6.484	
R-squared		0.060	Number of obs			142	
F-test		3.192	Prob > F			0.009	
Akaike crit. (AIC)		936.009	Bayesian crit. (BIC)			953.744	

*** *p<.01, ** p<.05, * p<.1*

Sources: Results of Author Data Processing (2026)

Table 7 summarizes the descript the robustness check analysis result confirms that the Extreme_Q4 variable remains negative and statistically significant at the 1 percent ($\beta = -8.213$, $p = 0.008$). Substantively, this indicates that organizational units experiencing extreme fourth-quarter spending concentration exhibit approximately 8.2 lower efficiency compared to the non-extreme ones on averages, holding other factors constant. Since the magnitude is economically meaningful, given the dependent variable's mean (–21.161) and standard deviation (6.484), it suggests that extreme year-end concentration materially deteriorates performance. This finding is consistent with agency theory, when agents (satker) facing fixed annual budget cycles and weak intertemporal incentives tend to accelerate spending near fiscal year-end, thereby prioritizing budget absorption over allocative efficiency (Jensen & Meckling, 1976). It also aligns with the soft budget constraint framework

(Kornai, 1986), which posits that when organizations anticipate future accommodation or limited penalties for inefficiency, they face reduced incentives for prudent timing and cost control. Empirically, this pattern echoes public financial management studies documenting "uses-it-or-lose-it" behavior and year-end spending spikes that reduce since it has a negative and statistically significant coefficient ($\beta = -9.861$, $p = 0.006$). This result is also in line with prior empirical studies on year-end spending behavior. Studies in the United States federal system by Liebman and Mahoney (2017) found that agencies tend to spend a disproportionate share of their budgets at the end of the fiscal year, with lower-quality procurement outcomes compared with purchases made earlier in the year. Similar evidence from public financial management studies in developing countries shows that back-loaded expenditure realization is commonly associated with weak planning, procurement bottlenecks, and compressed implementation periods that reduce spending effectiveness. Research in Indonesia has likewise documented recurring expenditure spikes in the final quarter, indicating persistent challenges in budget execution discipline and absorptive capacity. Compared with those studies, the present finding extends the literature by demonstrating not only the existence of year-end concentration, but also its measurable negative association with organizational efficiency. Thus, this study contributes additional evidence from the Indonesian public sector context that the year-end spending phenomenon is not merely administrative seasonality, but a structural determinant of performance. Taken together, these findings provide strong support for H1, which posits that Q4 execution pressure is negatively associated with financial efficiency. The consistent negative and significant coefficients in both the baseline and robustness models indicate that concentrated year-end spending systematically reduces efficiency.

In contrast, the control variables L_Revisions (late budget revisions) and ΔBlockedBudgetRatio still have the positive relationship with financial efficiency after robustness analysis ($\beta = 2.542$ and $\beta = 11.413$, respectively), and are statistically insignificant ($p = 0.312$ and $p = 0.225$, respectively). Furthermore, their interaction terms have a negative relationship with Extreme_Q4, but are likewise insignificant. The wide confidence intervals suggest substantial uncertainty around their marginal effects. At the quantitative level, this indicates that planning adjustments (late revisions) and changes in budget blocking do not independently explain efficiency variation once extreme Q4 concentration is accounted for. Conceptually, this implies that while revisions and fiscal controls may signal planning instability and micro-fiscal discipline (Schick, 1998; Allen & Tommasi, 2001), they do not systematically translate into efficiency losses unless they culminate in extreme end-of-year compression. The insignificant interaction effects further

suggests that externally imposed constraints (such as budget blocking) do not significantly amplify nor mitigate the inefficiency associated with extreme Q4 execution, reinforcing the interpretation that behavioral spending incentives – rather than formal fiscal controls – are the primary mechanism driving inefficiency.

However, from a qualitative and operational perspective, the absence of statistical significance does not necessarily imply irrelevance. Rather, it may indicate that these variables operate through compensating mechanisms whose positive and negative effects offset one another across spending units. This interpretation is comparable with earlier studies on budget flexibility and adaptive public management. Schick (1998) and Allen and Tommasi (2001) argue that budget adjustments such as reallocations, revisions, and expenditure controls may improve fiscal governance when used strategically, but may also create rigidities and implementation delays when applied late or excessively. More recent governance literature similarly suggests that procedural controls often have ambiguous performance effects because their outcomes depend heavily on managerial capability, institutional coordination, and execution timing. Therefore, the insignificant coefficients found in this study do not contradict prior research; instead, they support the view that administrative controls are contingent instruments rather than universally positive or negative determinants of efficiency. For instance, field observations in public organizations often show that late budget revisions can initially disrupt implementation because procurement plans, activity schedules, and output targets must be adjusted after the fiscal year has already progressed. Such revisions may create administrative delays, require repeated approvals, and compress the remaining execution period. Yet in practice, revisions are also frequently used as an adaptive managerial tool to reallocate underutilized funds toward more urgent or higher-performing programs, correct unrealistic initial allocations, or respond to unexpected operational needs. In some satker, revisions therefore reduce efficiency through delay, while in others they improve efficiency through better resource matching. When these heterogeneous effects are aggregated across observations, the net coefficient may appear statistically insignificant.

Therefore, the findings and interpretation are consistent with H2, which proposes that the efficiency implications of late budget revisions reflect competing disruption and adaptive mechanisms whose effects may offset each other under elevated execution pressure.

A similar explanation applies to budget blocking adjustments. Formally, budget blocking is intended to strengthen fiscal discipline by reserving or restricting expenditures until policy priorities, compliance requirements, or budget certainty are clarified. In some cases, this mechanism can improve efficiency by preventing premature or low-priority spending and encouraging stricter

expenditure screening. However, field practice also suggests that blocking may delay procurement processes, postpone contract execution, create uncertainty for implementing units, and force expenditure realization into a shorter year-end window once the block is lifted. Consequently, budget blocking can either support or hinder efficiency depending on the timing, duration, and managerial response of each unit. These offsetting effects help explain why the statistical relationship is not systematically significant, thereby supporting H3, which posits that blocked budget adjustments do not consistently reduce financial efficiency.

The insignificant interaction effects further suggest that formal fiscal controls, such as revisions and blocking mechanisms, do not significantly amplify or mitigate the inefficiency associated with extreme Q4 execution. This reinforces the interpretation that the primary driver of inefficiency is not the existence of administrative controls themselves, but the behavioral incentive structure created by annual budget absorption targets and end-of-year spending pressure. In other words, technical budget instruments may shape operational conditions, but they become secondary when agencies face strong incentives to exhaust budgets before fiscal closure.

Although the model explains a modest proportion of efficiency variation ($R^2 = 0.060$), the overall F-test is statistically significant (Prob > F = 0.009), indicating that the explanatory variables jointly contribute to explaining different performance. The relatively low explanatory power in public sector and behavioral fiscal studies is common due to the multiplicity of political, institutional, managerial and operational factors affecting outcomes that are difficult to fully capture in a single model (Pollitt & Bouckaert, 2017). Nevertheless, the robustness specification strengthens the core argument of this study: extreme fourth-quarter concentration is structurally associated with lower efficiency, consistent with agency-driven timing distortions and soft budget incentives embedded in manual budgeting systems, whereas late revisions and budget blocking function as context-dependent mechanisms whose mixed effects offset one another across spending units.

Conclusion and Recommendation

Conclusion

This study shows that the concentration of government expenditure in the fourth quarter (Q4 Syndrome) represents a structural challenge to financial efficiency in public financial management. The results indicate that stronger end-of-year execution pressure is consistently associated with lower financial efficiency, suggesting that when spending becomes highly concentrated near the fiscal year end, managers tend to prioritize rapid budget absorption rather than value-for-money outcomes. This pattern reflects institutional incentives embedded in the budgeting system, particularly performance assessments that

emphasize absorption rates and the expiration of budget authority at the end of the fiscal year. Under such conditions, managers rationally accelerate spending to avoid potential future budget reductions, consistent with agency theory and soft budget constraint theory.

In contrast, formal fiscal adjustments—such as late budget revisions and budget blocking—do not show systematic relationships with financial efficiency. Their limited statistical influence suggests the presence of offsetting mechanisms: revisions may both disrupt implementation timing and improve allocative alignment, while budget blocking may strengthen fiscal discipline but compress execution timelines. Consequently, behavioral execution pressure emerges as the primary driver of efficiency variation rather than formal budget adjustments. Nevertheless, the findings should be interpreted with caution because the analysis focuses on a single spending unit within the Ministry of Transportation, which may limit broader institutional generalization. At the same time, this sampled spending unit provides a particularly valuable and strategic context for analysis. As part of a sector characterized by large capital expenditures, complex procurement processes, multi-stakeholder coordination, and strong dependence on annual budget allocations, it reflects many of the operational pressures commonly faced across public organizations. Transportation programs often involve infrastructure delivery, service continuity, regulatory compliance, and time-sensitive implementation, making them highly exposed to delays, budget revisions, and year-end spending acceleration. These characteristics make the unit an informative case for observing how institutional incentives translate into managerial behavior under fiscal pressure. Therefore, while not statistically representative of all government entities, the case offers strong analytical relevance and practical insights for understanding broader expenditure management challenges in the public sector, particularly in agencies managing complex programs and significant public resources.

Recommendation

Improving financial efficiency requires addressing the incentive structures that generate end-of-year spending pressure. Performance evaluation systems should move beyond absorption-based metrics toward output- and outcome-oriented indicators that better reflect value-for-money. Strengthening early-year procurement planning, enforcing clearer quarterly execution milestones, and improving cash-flow forecasting may help distribute spending more evenly across the fiscal year. Additionally, limited rule-based budget carryover mechanisms could reduce "use-it-or-lose-it" incentives that encourage inefficient spending acceleration. In the Indonesian fiscal context, budget carryover should be applied selectively and under strict technical criteria so that it remains consistent with the principle of fiscal discipline. Technically, carryover would not mean unrestricted rollover

of unused funds, but rather the reallocation of clearly identified and contractually committed balances—such as multi-year procurement packages, ongoing capital projects, or delayed payments caused by administrative timing—into the following fiscal year through formal authorization in the subsequent budget document. The mechanism should be subject to expenditure ceilings, transparent reporting, and ex-post audit review to prevent moral hazard, preserve annual budget control, and maintain the credibility of deficit and financing targets. In this way, carryover functions as a corrective tool for implementation rigidities rather than a relaxation of budgetary discipline. Future research should extend the analysis across multiple spending units or ministries to better capture institutional variation and further examine the relationship between budgeting rules, execution behavior, and financial efficiency.

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